PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re the Application of:
SRINIVASAN

Serial No.: 09/386,787

Filed: August 31, 1999

Confirmation No.: 1797

Atty. File No.: 1539 (42059-00840)

For: "Automatic Desktop Audio/Video Data Conferencing Distributor"

Group Art Unit: 2664

Examiner: Ho, Chuong T.

CERTIFICATE OF MAILING

I HEREBY CERTIFY THAT THIS CORRESPONDENCE IS BEING DEPOSITED WITH THE UNITED STATES POSTAL SERVICE AS FIRST CLASS MAIL IN AN ENVELOPE ADDRESSED TO COMMISSIONER FOR PATENTS, P.O. Box 1450, Alexandria, VA 22313-1450 ON MARCH 30, 2005.

MARSH FISCHMANN & BREYFOGLE, LLP

BY: Maureen Sileo
Maureen Sileo

DECLARATION UNDER 37 CFR 1.131

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313

Dear Sir:

1. I, Kenneth J. Johnson, PTO Registration No. 36,834, am the Patent Attorney who received instructions from the assignee's predecessor, U.S. West Communications, Inc., to prepare and file a U.S. Patent Application on an invention entitled, "AUTOMATIC DESKTOP AUDIO/VIDEO DATA CONFERENCING DISTRIBUTOR," invented by Thiru Srinivasan.

2. This matter was designated by U.S. West Communications, Inc. as Docket No. 1539 and by one of my previous law firms, Holme Roberts & Owen LLP, as Matter No. 42059-0840.

3. This matter has been transferred to and is being handled by another one of my previous law firms, Marsh Fischmann & Breyfogle LLP, under the same Matter No. 42059-00840.

4. In late 1998, while at Holme Roberts & Owen LLP, I received an invention disclosure that was dated June 4, 1998 from the U.S. West Communications' Law Department for this invention, which was entitled at that time, "AN AUTOMATIC DESKTOP AUDIO/VIDEO DATA CONFERENCING DISTRIBUTOR," along with a December 16, 1998 cover letter. See Attachments at Tabs 1 and 2. As can be seen, the invention disclosure was witnessed on June 18, 1998, and received by the U.S. West Law Department on June 24, 1998.

5. This activity was prior to the February 19, 1999 filing date of the patent application that resulted in U.S. Patent No. 6,332,154 (Beck, et al.).

6. I prepared a patent application based on the invention disclosed in the invention disclosure and on July 30, 1999, I mailed a cover letter attaching a draft of a patent application on our client's invention to the inventor, Thiru Srinivasan, based on his earlier-received invention disclosure. See Attachment at Tab 3.

7. Sometime in the next several days, I received feedback from the inventor and, based thereon, finalized the patent application. See Attachment at Tab 4.

8. On August 31, 1999, I filed the patent application with the U.S. Patent and Trademark Office, and the application was assigned U.S. Pat. App. No. 09/386,787.

9. The undersigned Patent Attorney acknowledges that willful false statements and the like are punishable by fine or imprisonment, or both (18 U.S.C. 1001) and may jeopardize the validity of the application or any patent issuing thereon. All statements made of the undersigned's own knowledge are true and all statements made on information and belief are believed to be true.

This Declaration is signed by the undersigned Patent Attorney on the date reflected below.

Respectfully submitted,

By: _____
Kenneth J. Johnson, Esq.
Registration No. 36,834

Date: March 30, 2005

USWEST

Law Department Use Only	
Docket No.	1539
Date Rec'd	6/24/98
USW Entity	CMITS
Rec'd by (init.)	SM

INVENTION DISCLOSURE

RECEIVED
JUN 24 1998
US WEST LAW DEPT.

DIRECTIONS

Complete EVERY ITEM. If any item is not applicable or unknown, please indicate.

All inventors should sign the form (Item 14), as well as two witnesses (Item 15) and your supervisor (Item 16).

Send the completed, ORIGINAL form to the U S WEST Law Department - Intellectual Property Group, 7800 East Orchard Road, Suite 490, Englewood, CO 80111. You may FAX the form (FAX No. 303-793-6563), but please also send the original. If you have any questions, contact the Law Department at 303-793-6276 or 303-796-6030.

This document is available in electronic form on the file server at U S WEST Advanced Technologies, Inc. or in hard copy form from the Law Department. A sample completed form is also available from the Law Department.

Since patent rights can be lost by public disclosure, please keep your invention confidential until advised otherwise by the Law Department.

* *

(1) **Invention Title.** Give a short (10 words of less) descriptive title of the invention.

An Automatic Desktop Audio/Video/Data Conferencing Distributor (ADAVDCD).

(2) **Invention Summary.** State what you regard as the key invention concept (30 words of less).

Automatic Desktop Audio/Video/Data Conferencing Distributor (ADAVDCD) routes incoming audio/video/data conferencing calls to an available agent based on an algorithm of "largest idle time since the last call".

(3) **Purpose and Problems Solved.** Briefly state why the invention was developed, what problems it solves and the advantages it has over existing products or processes.

Definitions:

- A caller is a person who uses a web browser on the desktop to initiate a audio, video, or data conferencing call via the Internet.
- An agent is a person who receives the audio, video, or data conferencing call from the caller. The agent uses the Intranet to perform his/her job functions.

- A supervisor is a person who manages a group of agents. The agent uses the Intranet to perform his/her job functions.
- A split is a software entity that the agents log into depending on their skills in handling the incoming calls.
- Desktop audio conferencing allows an user (i.e. caller and callee) to place and receive audio calls over the Internet.
- Desktop video conferencing allows an user to place and receive video calls over the Internet along with the capability to use the data conferencing features.
- Desktop data conferencing allows an user to place and receive data calls over the Internet along with the capability to talk.

Desktop Audio, Video and Data Conferencing products available in the market permit audio, video, and data conferencing via a server (i.e. a computer) only when the called party is available i.e., logged on to the server and ready to accept the call. However, they do not provide

- a group of agents accessible to the callers for audio, video, or data conferencing, and
- the queuing of such calls to be delivered when an agent becomes available.

Automatic Call Distributors (ACDs) available in the market allow voice calls to be routed to a group of agents, depending on who is available to receive them. The voice calls can be originated from either the Public Switched Telephone Network (PSTN) or the Internet. However, ACDs do not have the capability to route video or data conferencing calls. Moreover, when the callers are queued up in the Customer Premises Equipment (CPE), as in a Private Branch eXchange (PBX), they typically hear music or important announcements about the company that the caller dialed. An ACD may also be programmed to inform callers of their position and the average wait-time in the queue when the callers enter it. However, it does not update the caller with the status of the position or the wait-time required in the queue thereafter.

ACDs may be programmed to deliver the caller's account information on the agent's desktop (based on the Caller ID) in conjunction with the delivery of the call. The agent will authenticate the caller before proceeding with the account information. It should be noted that any touch tone input done by the caller must be in response to a query from the Voice Response Unit (VRU) i.e., an announcement asking the caller to enter the information. The caller cannot enter any information proactively while on hold whereas in the case of a ADAVDCD, the caller can enter the information any time, even while waiting in the queue.

The following are the advantages of using the ADAVDCD over and above the existing ACD products:

- Queuing and subsequent delivery of desktop audio, video, or data conferencing calls.
- A means of showing a series of "banner" advertisements, each for a certain period of time, along with an option to either "bookmark" or "visit" the site while on hold.

- A means of providing us information on queue length and a· ge wait-time at configurable intervals of time (for example, every 2 minutes).
- A means of providing greater flexibility to the supervisor in handling the queue(s).
- A means of allowing the agent to verify the identity of the caller by displaying a picture from the database (applies only to video conferencing).
- A means to allow the caller to select a desired data and time the call will be returned if the caller does not wish to wait in the queue.

(4) **Description.** Describe the invention and/or attach a description, drawing(s) , flow chart(s) and/or diagram(s), if available.

Automatic Call Distributor:

Before proceeding with details of ADAVDCD, let us briefly talk about how an ACD works. An ACD is a software package that runs on a PBX or a Central Office switch (known as CO-based ACD). It is programmable via either the CMS (discussed below) or the touch of the keypad of a telephone set i.e., a supervisor can issue commands to alter the characteristics of the splits in the ACD. Agents log into their assigned splits based on the skills. They can manage their own states by using the touch-tone pad of the telephone sets (both analog and digital). For example, after completing a call, an agent can move into an AUX-WORK state to handle some paper work related to the call just completed or take a health break for a few minutes. He/she can make an outgoing call (OUT-CALL state) to a customer. Once an agent completes either an incoming or outgoing call, the ACD will set the state of the agent to AVAILABLE. Agents can move around the various states by either touch-toning the correct code if they are using an analog telephone or pressing a particular button (one for each state) on a digital telephone. Note that a digital telephone will not interrupt a customer's call when the agent presses a button corresponding to a particular state.

The ACD is equipped with a Voice Response Unit (VRU) that prompts the callers to touch-tone the input to the different menus. In addition, it is equipped with a music source that plays music or other important announcements while the callers are on hold.

The supervisor has access to an adjunct to the PBX known as Call Management System (CMS). This adjunct system (works using the Computer-Telephone Integration [CTI] protocol) allows the supervisor to set up the profile of an agent as belonging to a particular split based on the skills of the agent. For example, the supervisor can set up a default profile for an agent to always log into a Spanish speaking split. The supervisor, using the CMS, can monitor the performance of the ACD in terms of the call volume to the different splits, average time for the splits to answer an incoming call, etc. He/she can also monitor the performance of a particular agent in terms of the calls answered, average talk time, amount of time spent in different states, etc.

Automatic Desktop Audio/Video/Data Conferencing Distributor:

The ADAVDCD will publish the various domain addresses used by the company. For example, a bank "USA Bank" can have different departments handling various functions, and can advertise different addresses (i.e., splits in ACD terminology) as in loans@usabank.com, customerservice@usabank.com, mortgage@usabank.com, investment@usabank.com, and creditcards@usabank.com. The ADAVDCD will run as a software package in the audio/video/data conferencing server. Commands can be executed from desktops over the Intranet by both the agents and the supervisor. The CMS will be a component of the ADAVDCD. The CMS functionality is accessible over the Intranet by the supervisor using a browser. The supervisor will have access to a particular Universal Resource Locator (URL) that will bring up a "Supervisor Window" on the desktop. After log in, the supervisor can access the CMS functionality. In a similar fashion, the agents, using a browser, can access the ADAVDCD over the Intranet for all of their functions. Agents will have access to a particular URL that will bring up a "Agent State Window" on their desktops. The picture displayed in the window will show the various states (LOGGED_OUT, AVAILABLE, AUX-WORK, and OUT-CALL). The agent can click on a particular state in the picture and, if allowed by the software, the agent will move into the desired state. The current state of the agent will be highlighted in the window with a suitable color. The ADAVDCD will access a database resident in the audio/video/data conferencing server. This database will contain information regarding agents, supervisor, and splits as well as customers' account related information.

Once the caller enters the queue, the ADAVDCD will display a "Call Status Window" of the caller's desktop. This window will show the progress of the call (for example, ringing, callee refused to accept, and call enters a queue). If the caller enters a queue, then the window will display an option to have the call returned at a specified data and time, if the caller so desired. When the caller enters the required information and submits it to the ADAVDCD, a record in the database will be created for the call to be returned by the called party. The caller will be notified of the acceptance of the "return my call" information submitted; the call will then be disconnected by the ADAVDCD.

The database will also contain the "banner" advertisements that will be displayed on the callers' desktops while they are on hold. The ADAVDCD will use PUSH technology to transmit the advertisements at pre-configured intervals of time (i.e. the advertisements will be shown one after another at a pre-configured interval). The browser will receive the advertisements and display them in the "Call Status Window". In addition, the browser will be enhanced to support the capability to "bookmark" and "visit" (may be done by providing buttons that the caller can click) the website of the advertisement while the caller is viewing the advertisement on the desktop. If the caller presses the "visit" button, then the browser will launch a new window, establish a connection to the website, and display the contents from the site. Mean while, the current advertisement in the "Call Status Window" will be replaced (after the pre-configured interval expires) by the next advertisement in sequence.

The ADAVDCD will calculate the position of the caller in the split and its average wait-time on a per queue basis at pre-configured intervals of time and send the information via the PUSH technology to the callers on hold. The browser will be enhanced to display this information in the "Call Status Window" of the screen.

The ADAVDCD may allow the supervisor to view whether a particular caller or set of callers, on hold in the queue, is considered to be a Very Important Person(s) (VIP) based on the caller's domain address (for example, tsriniv@uswest.com), and be treated in a special manner. The determination of the VIP status is done by the database based on several factors. For example, volume of purchase, average purchase price, etc. The supervisor may be allowed to move such callers in the queue to another split (for example, vip@usabank.com) or direct each individual caller to an agent of his/her choice.

The routing of a call from the queue to an available agent will be done using the domain address of the agent as in thiru@agents.usabank.com. The domain addresses of the agents and the supervisor will not be known to the customers unless the agents disclose them voluntarily for business reasons (similar to agents giving out their extension numbers for customers to call back later).

If a company has many branches in a metropolitan city, then the company's web page can list all the domain addresses that will accept Audio/Video/Data Conferencing calls based on ADAVDCD. For example, USA Bank can list all the branches in the Denver area. A search utility on its home page at www.usabank.com can enable a customer to find a particular branch's address in a given state. After getting the address from the web page, the customer dials (for example, using Netscape Navigator's Conference feature) the domain address corresponding to the branch he/she wants to talk.

When the call is answered by the agent, the ADAVDCD will bring up a picture of the caller (already scanned into the database) based on the domain address, along with the account information in different windows, thus enabling the agent to authenticate the caller visually (applies only to the desktop video conferencing scenario). After completing each call, the agent will select the AVAILABLE state by clicking in the appropriate area of the "Agent Status Window" so as to make him/her available to receive the next call.

If the caller tries to originate a new desktop audio, video, or data conferencing call to another party while on hold in the queue of ADAVDCD, then the browser will drop the connection to the ADAVDCD as if the call was completed in a normal fashion, and proceed to set up the call to the new destination. The "Call Status Window" pertaining to the old call will disappear and a new one will appear on the caller's desktop.

(5) **Business Area.** Check the business area that best fits your invention.

[___] Network Services	[_X_] Multimedia/Video	[___] Speech Recognition
[___] Network Operations	[___] Digital Signal Processing	[___] Voice Messaging
[___] AIN	[___] Wireless	[_X_] ISDN
[_X_] Info. Management	[_X_] Broadband	[_X_] Other:
	___Inter/Intranet & White Pages_____	

(6) **Responsible U S WEST Entity.** Provide the name of the U S WEST Division/Subsidiary having responsibility for the invention. This is usually the organization in which the inventor (or majority of inventors) is employed.

I.T. /U S WEST Communications, Inc.

(7) **U S WEST Project Name or No.**
a. Under what U S WEST project name or number was work done which resulted in the invention?

Interconnect Mediated Access (IMA) - EDI201E0

b. If the project was funded by organization(s) other than the responsible organization in Item 6 above, please name that organization(s).

Not applicable.

(8) **Conception Date.** When was the invention first conceived? Please list any records (engineering notebook, memos, etc.) which establish such conception.

June 4, 1998.

(9) **Prototype or Model.** Has a prototype/model been built? If so, when was it built and where is it now?

No.

(10) **Related Items.** Are there any existing products, processes, patents or U S WEST invention disclosures similar or which may relate to the invention? If so, please list them.

- ACD and CMS functionalities.
- **Telephone switches are capable of routing calls originated from the Internet i.e., desktop audio conferencing calls to an ACD.**
- Desktop Audio/Video/Data Conferencing using Netscape and Internet Explorer browsers. However, changes are required to the browsers (along with building of the servers) to support the ADAVDCD functionality;
- An example of a server that can be modified to support the ADAVDCD functionality is the Microsoft NetMeeting 2.1;

- "Banner advertisemei are being used as a mechanism to attra stomers to visit a company's website.
- Accepting a date and time for returning a call. See Patent number 5,185,782 issued to Thiru Srinivasan.

(11) **Sale or Public Use.** Has this invention been sold, offered for sale or publicly used (field trial, etc.) or is such sale or use anticipated? If so, please supply actual or anticipated dates.

No.

(12) **Publication or Disclosure.** Has the invention been disclosed in a publication or disclosed to anyone outside U S WEST or is such disclosure or publication anticipated? If so, supply actual or anticipated dates.

No.

(13) **Commercial Value.** Briefly outline the potential commercial value of the invention (e.g., likelihood of use by others, licensing potential, etc.).

The ADAVDCD can be used in different applications such as Telemarketing, Customer Service, Virtual Job Fairs for conducting interviews, and bank, brokerage, financial institutions, and government related transactions requiring security clearances. For easy identification of companies making use of ADAVDCD, U S WEST can allocate a separate section in its White Pages distributed to the customers and publish the names of the companies, the type of calls taken i.e., audio, video, or data conferencing, the domain addresses along with a description (for example, USA Bank, for loans - loans@usabank.com, for enquiries customerservice@usabank.com, etc.).

(14) INVENTOR SIGNATURES

First Inventor (print first, MI, last)	THIRU SRINIVASAN	Citizenship	INDIA
Home Address	9675 S. RED OAKES PLACE, HIGHLANDS RANCH, CO 80126		
USW Subsidiary/Div.	I.T.		
Work Address	1005 17th Street, Suite 1090, DENVER, CO 80202		
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Signature		Date	06-04-98

Second Inventor (print first, MI, last)		Citizenship	
Home Address			
USW Subsidiary/Div.			
Work Address			
Work Phone		Fax	
Signature		Date	

(attach more pages if required)

(15) WITNESS SIGNATURES

Read and understood:

Witness #1 (print name)	SANDEEP PAL		
Signature	Sandeep Pal	Date	06/18/1998

Witness #2 (print name)	VENU JAYARAM		
Signature		Date	06/18/1998

(16) SUPERVISOR SIGNATURE

Supervisor (print name)	Rob Mitchell		
Signature		Date	

U S WEST, Inc.
1801 California Street
Suite 5100
Denver, Colorado 80202
Telephone 303 672-2968
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Rhonda M. Hardesty
Legal Secretary

U S WEST
life's better here

December 16, 1998

Ken Johnson, Esq.
Holme Roberts & Owen
1700 Lincoln Street
Suite 4100
Denver, Colorado 80203

Re: U S WEST Invention Disclosure for Case 1539
Patent Application Preparation

Dear Ken:

Enclosed is a copy of an invention disclosure and associated documents for which U S WEST would like Holme, Roberts & Owens to prepare and file an application. The particulars are as follows:

Our Case:	1539
Title:	AUTOMATIC DESKTOP AUDIO/VIDEO/DATA CONFERENCING DISTRIBUTOR (ADAVDCD)
Inventor(s):	Thiru Srinivasan
U S WEST Entity:	U S WEST Communications/Information Technologies
Deposit Acct. No.:	21-0456
U S WEST Attorney:	Mark A. Thomas
Client Billing Code:	ITS-0049

Please let me know if you need anything further.

Very truly yours,

Rhonda M. Hardesty

Rhonda M. Hardesty

Enclosure

Holme Roberts & Owen LLP

July 30, 1999

Thiru Srinivasan
U S WEST, Inc.
1005 17th Street, Suite 1090
Denver, CO 80202

Kenneth J. Johnson
(303)866-0639
johnsok@hro.com

Re: "AUTOMATIC DESKTOP AUDIO/VIDEO/DATA CONFERENCING DISTRIBUTOR";
Our File No.: 42059-00840
U S WEST Docket No.: 1539

Dear Thiru:

Enclosed is a draft of the above-identified patent application for your review. Please review the application to assure that it properly and accurately describes the invention as originally disclosed in your Invention Disclosure Sheet. Please make your changes on the enclosed copy and when you are finished please call me at 866-0639 so we may discuss this application further.

While reviewing the application, keep in mind that the claims must particularly point out and distinctly claim the subject matter of the invention, so it is important that you review them very carefully. The claims attempt to cover the invention in its broadest aspects and also more specifically. The broadest claims should represent only the essential features of the invention. Review these claims for any element which could be eliminated without losing the essence of the invention. The remaining claims, in different degrees, are more limited, i.e., they contain additional elements. Check for limitations which are completely unrelated to the inventive concept, as well as additional limitations which should be included.

Please remember that this application is Confidential and Proprietary and must be treated accordingly. It should be secured at night and adequately protected during the day.

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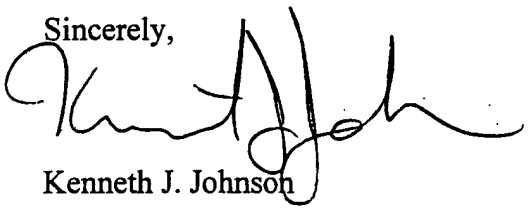
If you have any questions please do not hesitate to contact me.

Sincerely,



Kenneth J. Johnson

Enclosure
cc: Mark A. Thomas, Esq. (w/o enc.)

(1539)

File No. 42059-00840

AUTOMATIC DESKTOP AUDIO/VIDEO/DATA CONFERENCING DISTRIBUTOR

FIELD OF THE INVENTION

The present invention relates to a system for facilitating communications between parties using personal computers, and more particularly, to a system which provides for establishing lines of communication over a data network or telephone lines, and provides for establishing lines of communication in a number of different modes, such as audio, video, or data.

BACKGROUND OF THE INVENTION

Many companies and other organizations possess phone systems which direct callers to agents employed by the business. The voice calls can originate from either the public switch telephone network (PSTN) or the Internet. When calls are placed, the callers are typically queued up in the customer premise equipment (CPE), as in a private branch exchange (PBX) where they hear music or important announcements about the company the callers dialed. An automatic call distributor (ACD), which is part of the CPE, may be programmed to inform callers of their position and the average wait time when the callers enter the queue. However, many systems will not provide updates to the caller with regards to the status of the position or the wait time in the queue thereafter.

An ACD is a software package that runs on a PBX or central office switch. It is programmable either via the Call Management System (CMS) or the touch of the keypad of a telephone set, i.e. a supervisor can issue commands to alter characteristics of splits in the ACD. Agents may log into their assigned splits based on the skills. They manage their own states by using the touchtone pad of the telephone sets.

The supervisor may also have access to the CMS which is an adjunct of the PBX. This adjunct system allows the supervisor to set up a profile of an agent as belonging to a particular split based on the skills of the agent. For example, the supervisor can set up a default profile for an agent to always log into a Spanish-speaking split. The supervisor, using the CMS, can monitor the performance of the ACD in terms of the call volume to the different splits, average time for the splits to answer an incoming call, etc.

SUMMARY OF THE INVENTION

It has been recognized that data networks, such as the Internet, are being employed more often for things such as reviewing product information at company websites and for e-commerce. It has been further recognized that network tools such as IP telephony, video conferencing, and real time data interchanges through such devices such as a white

board, may be employed in an ~~interchange~~ exchanges with potential customers or clients through a company website.

The system described herein provides for the establishment of lines of communication between users of personal computers and representatives of a business or organization. In operation, a system user may try to contact a business or organization either through a data network such as the Internet, or ~~via~~ a direct connection over the public switch telephone network (PSTN) through use of a modem. Through either method, a connection may be established with a network server controlled by the business or organization. The server may include a number of interactive displays which may be presented to the ~~system user~~ browser. Included in the displays may be options on establishing a lines of communication.

In one aspect of the invention functionality lines of communication may be established in ~~either~~ an audio mode, a visual mode, and/or a data mode. In the scenario where a system user selects the audio mode, a connection may be established between the system user and an agent through use of IP telephony. A system user may also select a video conferencing function in which a video and audio connection may be established between the system user and agent. Finally, if the system user selects a data connection, communications between the system user and the agent may be

facilitated through the use of a white board with which the parties may exchange textual messages.

In another aspect of the invention, the server is connected to a data network, such as the Internet, and a system user, through use of a dialup connection to an Internet service provider (ISP) and a web browser, may establish a connection with the server. Alternatively, the server may be equipped with a modem and a connection to a PSTN. A system user, with a modem and a phone connection, may then dial up the network server directly.

Once a system user has established a connection, the server may provide a number of interactive screen displays with which a system user may interact to further establish a connection with a representative in a desired mode of communication. One screen display which may be provided is a informational input display in which a system user would input a name and possibly an account number in order for the system to locate personal information about the system user stored in memory. Once accessed, this information can be provided to the representative who will connect with the system user.

As with most customer service systems, there may be times when a representative is not available to whom a connection may be established. For this situation, a queue may be provided in which a system user's connection may be

routed until a representative becomes available. In conjunction with being routed to the queue, the system user may be presented with another screen display which provides status information as to the system user's connection. This status information may include the number of other system users in the queue, and an estimated length of wait before a connection may be established with an agent. For situations in which the system user chooses not to wait in order to establish a connection, a screen display may be presented in which the system user may enter information regarding identification and times and numbers for receiving a telephone call from an agent.

In another aspect of the invention, while the system user is in the queue, screen displays may be presented which include hypertext links to designated Websites. These links may be to informational Websites for the organization or business which the system user is contacting, as well as a number of other sites ~~which~~ THAT be of interest. The system is configured such that selection of one of the hypertext links does not remove the system user's connection from the queue.

Once an agent is identified to receive the connection, another screen display may be presented to the system which includes different selections for modes of communication. As described above, these selections may include an audio,

MAKE AS A CLAIM

CAN DO AT SAME AS OF SCREEN

PRESENT A SCREEN TO CALLER ABOUT AGENT. PERSONAL INFORMATION. TELEPHONE NUMBERS - ACHIEVEMENTS USER NAME & PHONE #

video and/or data connection. Once a system selects a particular mode, the system will facilitate the connection.

Upon establishing a connection with an agent, information regarding the system user may be automatically retrieved from a memory and presented to the agent. The agents may be connected to the server over a local area network (LAN), and information regarding the system users may be accessed in the server. In the situation where a video connection will be established, pictures of the system users stored in memory may be accessed and presented to the agent in order to confirm the identity of the party.

In yet another aspect of the invention, the server includes the functionality to distribute the incoming connections of the system users to the agents which are connected to the server through the LAN connection. In general, this functionality includes the ability to route system users to an agent based on compatibility placing the system users in a queue when all of the agents are occupied, routing the connection to agents as they become available, and provide particular personal information for the system users who are being connected. Further functionality which may be incorporated in the server includes the functionality for agents to log on to the system, change their operating status and input information with regard to the type of system users with which they will receive connections for.

As an example, an interactive screen display may be provided to agents from the server through which they can change their availability status with regards to the system. Some examples of status changes include when an agent is available to receive calls, an agent is currently unavailable, and an agent is placing an outgoing call to a customer.

Because agents may have particular skill levels with regards to dealing with system users, the routing of incoming connections to agents may be controlled by storing a profile (i.e. split) for a particular agent in the server memory. Based on the information in the split and the personal information relating to the system user retrieved the server memory the connection may be routed to an appropriate agent.

A supervisor may have access to a screen display through which changes may be made to the splits with regards to particular agents. Further, screen displays may also be provided through which a supervisor may monitor the identity of system users either currently connected or in the queue.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 discloses a diagram for the communications system, including the data network.

Fig. 2 discloses an internal system diagram for the communications server.

Fig. 3 discloses an interactive screen display presented to system users upon establishing communications server.

Fig. 4 discloses an interactive screen display presented to system users to select a mode of communications.

Fig. 5 discloses a call status window screen display which is presented to system users once a connection has been placed in the queue.

Fig. 6 discloses an interactive screen display presented to agents to make status changes.

Fig. 7 discloses a screen display which presents statistics as to the performance and profiles of agents.

Fig. 8 discloses a flow chart which describes the routing of connections to agents.

DETAILED DESCRIPTION

Disclosed in Fig. 1 is a diagram for the communications system described herein. The network communications server 18 may be of any number of network servers commercially known. Connections may be established to the network through data network 10, which may be the Internet. The server 18 may also include a dialup connection where

connections may be established directly to the server through a public switch telephone network (PSTN) 15. Finally, direct connections may be established to a number of local computers through a local area network (LAN) type configuration.

The system users, who employ personal computers and like devices, may establish a connection with communications server 18 through at least two different modes. According to one mode of communication, a system user 12 with a personal computer and Web browser software may employ a modem 14 to establish a telephonic connection with Internet service provider (ISP) 16. Through the ISP, a connection may be established with data network 10. As is seen in Fig. 1, server 18 is connected as a node on the data network 10.

Another line of communication may be established to the system of Fig. 1, through the PSTN. The user 12, through use of the modem 14, may establish a direct telephonic connection through PSTN 15 to the communications server 18. The communications server includes a modem adaptable for receiving telephonic communications.

The present system may be employed to establish lines of communication between system users and agents of a business or organization through the use of personal computers. As is well known in the art, many telephone systems now exist today where parties interested in

contacting a organization or business may dial up a designated number and a system employed by the organization or business routes the incoming telephone calls to available agents. The present system provides the functionality for the system users who are using a personal computer to establish a connection either over a data network or over the PSTN with an agent.

Once a system user establishes a connection with the communications server, interactive screen displays may be presented to the system user through use of web browser software, and the system user may enter personal information such that further account information may be retrieved from a memory in the server. The communications server may then route the connection along with the personal information to an available agent who has the profile to handle the system user. The system user may be provided choices for selecting a desired mode of communication.

If when a system user establishes a connection and there are no agents available, the connections may be placed in a queue. While in the queue, the system user may be provided with information as to wait time and position in the queue. Once an agent does become available, the connection may then be routed to the identified agent along with the personal information for the system user. The system further provides

for allowing system administrators and agents to make status changes with regards to the operations of the system.

Disclosed in Fig. 2 is an internal system diagram for the communications server 18. In order to establish user connections over the data network 10 a network interface 32 is provided. This interface provides for the two-way transmission of data signals such as would be received and transmitted over the Internet. Also incorporated into the server is modem 33. As was discussed above, this modem provides for a direct connection between a system user and the communications server over the PSTN. The central processor 30 controls the operation of the server and directs the internal signals between the various interfaces and the various memories and processing modules.

In order to provide the various modes of communication, the communications server includes a number of processing modules 34. Some of the processing modules included provide for either audio, video, or data conferencing with system users. The audio 36, video 38 and data conferencing module 40 incorporates the software known in the art in order to establish these types of connections.

Queue processing module 41 provides for the routing of system user connection to a queue and provides the functions which may be performed in the queue by the system user. The use of the queue will be described in greater detail below.

Agent processing module 43 provides for all functions performed by agents in order to make status changes and for supervisors to monitor and manipulate information with regards to the agents. These functions will be also described in greater detail below.

Also in connection with processor 30 are a number of different databases which include information employed by the system. Stored in screen display database 44 are the interactive screen displays which are presented to the system users establishing the connection with the server, as well as the agents with whom the system users are communicating. Included in database 46 is specific information as to the profile, or split of a particular agent. A split includes information relating the types of system users which the particular agent may communicate with. For example, if an agent is proficient in speaking Spanish, when a system user establishes the connection with the communications server, personal information for the system user may note that system user speaks Spanish, and thus the particular agent may provide services for the system user. Included in database 30 is personal, or account, information about the system users who establish a connection with the system. This information, as well as the information in database 46 may be used to populate the screen displays retrieved from database 44.

Customer database 45 contains information relating to the system users which establish a connection with the system. The information contained in this database may include relational tables which relate account numbers to other profile information with regards to the system user. This information may be things such as purchases made in the past, amounts of money spent, language which the system user wishes to communicate in, as well as any other relevant information which may be of help to an agent.

Another element of the communications server is the LAN interface 42. This interface provides for the connections established between the various personal computers employed by the agents and the communications server.

In operation, a system user may establish a connection with the communications server either through the data network 10 or over the PSTN 15. The web browser incorporated into the system user's computer provides for the system user to establish a connection with the business or organization's web page located on the communications server 18. Through access of this web page, a number of additional functions may be performed.

Disclosed in Fig. 3 is a web page which a system user may be presented when a connection is initially established with the communications server. Included in this web page are a number of interactive features which allow a system

user to enter information about themselves such as name and account numbers, and password. For example, in Fig. 3 the web page 49 includes dialogue boxes 50 and 52 which request that a system user enter their name and account number, respectively. Upon entry of this information in the appropriate dialogue box, the enter button may be selected and the information entered.

After the information is entered, a screen display such as that disclosed in Fig. 4 may be presented to the system user. Through this interactive display graphic 56, the system user may select the mode of communication to be used when communicating with an agent of the organization or business. As seen in the example display graphic, three modes of communication are available for selection. If button 58 is selected, an audio connection is established employing IP telephony. As is currently known in network technology, many software packages are available which when installed on the server and used in conjunction with plugins incorporated into web browsers, provide for audio communication between parties. If the video button 60 is selected, a video and audio connection may be established between the parties. As with the audio selection, video conferencing software and hardware packages are available for making such a connection. These packages include Microsoft meeting or Netscape Conference.

Another communications mode provided on the interactive display graphic 56 is data conferencing. Upon selection of button 62, the server will establish a data conference between the system user and the designated agent. For this situation, the parties activate software which presents a white board upon which textual messages may be exchanged. Commercial software packages are also available to perform these functions.

Once a connection has been established to the server and a system user chooses a particular mode of communication, the system connects the system user to an agent, if one is available. However, the situation may exist where no agent is available to receive the communication. In this case, the system user may be provided the option of entering information in a screen display such that the business or organization operating the communications server may contact the system user directly. Examples of this information include home or work telephone numbers and e-mail address. Alternatively, the system user may have the option of having their connection placed in a queue where the connection is held until an appropriate agent becomes available.

If the system user chooses to move the connection to the queue, display graphic 64 disclosed in Fig. 5 is presented to the system user. This display graphic provides

a variety of different kinds of information which may be useful to the system user. Dialogue box 68 provides status information to the connections being placed in the queue. As seen in the example, when an audio call is placed, different steps for the status of the connection are displayed. Included may be a call ringing statement, a call answer statement and a call placed in the queue because no agents are available.

Once a connection is placed in the queue, the system will provide additional information and dialogue boxes 72 and 74 as to a system users position in the queue and the estimated wait before a connection to an agent may be established. The position may be determined by the number of system users previously connected. The estimated wait may be determined through an algorithm which provides an average call length for the call currently in connection. As an additional feature, the interactive display graphic 64 may include a hypertext link 70 provided by the business or organization controlling the server, which when selected, connects the system user to the organization's or company's home page such that the system user may view information as to products and services. Using the Web browser, the system user may move through the various pages provided by the system user without moving out of the queue. Finally, the interactive display graphic 64 may include a banner

advertisement transmitted from the communications server using Push technology. While the system user is waiting in the queue, the advertisement may be changed on a periodic basis.

Once the agent has been provided with the identification information for the system user, a connection is established between the system user and the agent according to the mode selected by the system user. As was mentioned above, both the system user's computer and the agent's computer include the necessary processing submodules in order to facilitate the chosen mode of communication. Upon completion of the connection, regardless of the mode, the parties may simply press the disconnect button included on the screen display and the connection will be terminated.

Disclosed in Fig. 9 is a flowchart which describes in detail the operations of the communications server when a system user is establishing a connection in order to communicate with an agent of a business or organization. Initially, when the system user connects with the communications server, a screen display is presented through which the system user may enter a user name and or password. Once this information is entered, a search of the database in the communications server is performed to retrieve the profile of a particular system user. Based on the information retrieved, an analysis may be performed to

identify an agent qualified to communicate with the system user. If there is not an available agent, the system user is presented with a screen display which provides a choice as to whether the system user wishes to enter a queue to wait for an available agent, or they would prefer to leave a message to be contacted later by an agent.

If the system user wishes to leave a message, a screen display is presented through which the system user may enter communications information. This information may include e-mail addresses or telephone number. The system user is then disconnected from the server.

If the system users chooses to wait in the queue, the communications server will move the connection to the queue where the system user will be presented with a screen display which contains information as to position in the queue and the wait time. As described above, a hypertext link may be provided for the system user to connect with other web sites while waiting.

Once an available agent is either identified initially or after a wait in the queue, a screen display will be presented to the system user through which a mode of communication may be selected. Once the desired mode is selected, a connection will be established between the system user and the available agent. In conjunction with establishing the connection, the communication server

provides the agent with the personal information for the system user which was retrieved from memory. Upon completion of the interchange between the system user and the agent, either party may terminate the session.

The system described herein further includes the functionality to automatically route connections and manage and monitor the performance of the agents. When an agent is ready to begin work and begin receiving connections from system users, a log-in procedure is performed. Once this procedure is performed, the processor, through the agent processing module, may monitor which agents are currently logged in, which agents are available to receive calls, and the profile, or splits of the agents currently connected which is used to route the connections to the appropriate parties. The procedure for assigning calls will be described in greater detail below.

Once an agent logs in, an interactive display graphic such as that disclosed in Fig. 6 is presented. Through this display graphic, the agent may change his or her status with regards to receiving connections. If the available button 78 is selected, this indicates to the communications server that the agent is ready to begin receiving connections. If the AUX-work button 80 is selected, this indicates that the agent is currently unavailable for receiving connections.

This may be due to work currently being performed on a previous connection or when the agent is on a break.

If the out-call button 82 is selected, this indicates to the communications server that the agent is currently placing an outgoing call to a customer. This feature may be programmed as soon as the connection is terminated and button 80 is not selected, the agent is available to receive additional connections. Finally, if the agent selects log-out button 84, the agent is logged out of the system. Provided on the display graphic is dialogue box 86 which provides notice to the agent, or whoever is viewing the screen, of the current status of the agent logged in.

As described above, each of the agents who log into the system have a split which includes information as to the profile of the agent stored in memory. Included in the profile may be things such as language proficiency, types of system users which may be routed to them, as well as statistics regarding length of call and disposition of call. Disclosed in Fig. 7 is an interactive screen display which a supervisor may view with regard to a particular agent. In the display graphic 90, a dialogue box 92 provides the name of the particular agent. In dialogue box 94 is the profile for the agent at issue. Through selection of the edit profile button 98, a supervisor may edit the profile of a particular agent to expand or contract the duties. A final

dialogue box 96 may also be provided which lists relevant statistics for the agents.

An additional feature which may also be included in the invention is a screen display which an agent or supervisor may view in order to identify the party currently in the queue. Functionality may provided to route parties to the particular agents based on this identification. For example, if a supervisor views the queue and identifies a person to be an important person based on a system users domain address, the supervisor has the ability to deal with this party in a special manner. Determination of the VIP status may be done based on several factors. For example, volumes of purchase, average purchase price, etc. The supervisor may be allowed to move such callers in the queue to another split or direct each individual caller to an agent of his or her choice.

The routing of a call from the queue to an available agent will be done using the domain address of an agent. The domain address of the agents and the supervisors will not be known to the customer unless the agent discloses them voluntarily.

Disclosed in Fig. 9 is a flowchart which describes in detail the steps performed by the communications servers when routing a call from the queue to a particular agent.

ALL BACK FLOW CHART AND EXPLANATION

The foregoing description of the present invention has been presented for purposes of illustration and description. Furthermore, the description is not intended to limit the invention to the form disclosed herein. Consequently, variations and modifications commensurate with the above teachings, and the skill or knowledge of the relevant are, within the scope of the present invention. The embodiments described hereinabove are further intended to explain best modes known for practicing the invention and to enable others skilled in the art to utilize the invention in such, or other, embodiments and with various modifications required by the particular applications or uses of the present invention. It is intended that the appended claims be construed to include alternative embodiments to the extent permitted by the prior art.

CLAIMS

What is claimed is:

1. A communications system comprising:

a user interface through which users may establish a connection with the system through use of a personal computer;

a agent interface through which agents may establish a connection with the system through a personal computer;

a central processor which provides for establishing a line of communication between the users and the agents based on a mode of communication selected by the user;

a user memory which includes personal information for the user that have established a line of communication, wherein the central processor retrieves the user information when a connection is detected, and said user information is presented to the agent with which a line of communication has been established; and

a queue within which connections to the user may be directed when a first predetermined condition is detected by the processor, and which may be connected with an agent when a second predetermined condition is met.

2. The system of claim 1 wherein the mode of communication include at least one of: audio communication, video communication, and data communication.

3. The system of claim 1 wherein the user interface provides a connection to a data network and the users establish a connection through the interface using a web browser.

4. The system of claim 3 wherein the data network is the Internet.

5. The system of claim 1 wherein the user interface provides for connections established over a public switched telephone network (PSTN).

6. The system of claim 1 wherein the system is incorporated in a network server.

7. The system of claim 1 wherein agent interface provides for connections established over a local area network (LAN).

8. The system of claim 1 wherein the first predetermined condition is unavailability of an agent, and the second predetermined condition is the agent becoming available to receive the connection stored in the queue.

9. The system of claim 1 wherein the system further includes and agent monitoring module through which the agents may log into the system and amend status information.

10. The system of claim 9 wherein performance information may be accessed and viewed through use of the agent monitoring module.

11. The system of claim 3 further including a first memory which includes user interactive screen displays which are presented to the users that have established a connection through the user interface.

12. The system of claim further including a second memory which includes agent interactive screen displays which are presented to the agents that have established a connection through the agent interface.

13. The system of claim 12 wherein the status includes at least one of: agents currently active, identification information for connections in the queue, change of agent status.

14. A method of providing communications computer users comprising the steps of:

detecting a connection established by at least one user through a user interface;

displaying a first interactive screen graphic to the at least one user, wherein the interactive display graphic includes selections as to a desired mode of communication and provides for entry of selected information;

based on the selected information entered, retrieving from a memory personal information relating to the at least one user;

performing a search to determine if an agent is available to establish a connection with the at least one user;

if an agent is available, providing the personal information to the agent through a second screen display and establishing the connection between the user and the agent according to the mode of communication chosen by the at least one user; and

if an agent is unavailable, placing the at least on user's connection in a queue until one of the agents becomes available, wherein a connection is established between the user and the agent according to the mode of communication chosen by the at least one user

15. The method of claim 14 wherein, when a connection is placed in the queue, presenting a third interactive screen display which includes least one hypertext link to the at least on user, wherein a connection is established to a designated Website when one of the hypertext links is chosen.

16. The method of claim 14 wherein the at least one user establishes a connection over a data network.

17. The method of claim 16 wherein the data network is the Internet.

18. The method of claim 14 wherein the at least one user establishes a connection over the PSTN.

19. The method of claim 14 wherein the connection to the agent are established over a local area network (LAN).

20. The method of claim 14 wherein the modes of communication include at least one of: video, audio, and data.

21. The method of claim 14 further comprising the step of receiving change in status information from one of the agents, and changing the status of the agent accordingly.

22. The method of claim 14 further including the step of storing performance information for selected numbers of the agents and displaying the performance information up receipt of a valid request.

23. The method of claim 15 further comprising the step of generating selected information with regards to the at least one user in the queue and presenting the selected information to the at least one user through the second interactive screen display.

--ABSTRACT OF DISCLOSURE

A communications system provides for the establishment of audio/video/data connections between system users employing a personal computer and Web browsers, to agents of a business or organization. A business or organization may provide a Web server through which system users may connect either over a data network or over the public switch telephone network (PSTN). Once connected, various screen displays may be provided through which system users may enter account or other personal information which the server may employ to locate a profile for the system user. A system user may be provided the option to establish communication with an agent in a number of different modes. Once a mode is selected, the system user will be connected with an agent who is best able to serve the system user based on the profile information found in memory. If an agent isn't available, the system is configured such that connections may be entered in a queue and information with regards to position in queue and waiting time can be provided to the system user. Further, functionality is also provided for the system user to search other Websites while maintaining their position in the queue.